Duke Power Company
Catawba Nuclear Generation Department
4800 Concord Road
York, SC 29745

M.S. Tuckman
Vice President
(803)831-3205 Office
(803)831-3426 Fax

DUKE POWER

September 24, 1992

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

Subject: Catawba Nuclear Station, Unit 1
Docket No. 50-413
Special Report
Invalid Failures of Diesel Generator 1B

Pursuant to Technical Specification 4.8.1.1.3 and 6.9.2, find attached a Special Report concerning the Unit 1 Diesel Generator B (DG 1B) invalid failure that occurred on August 29, 1992.

Very truly yours,

M. S. Tuckman

CRL/SRDG1B92.492

Attachment

xc: S. D. Ebneter
Regional Administrator, Region II

W. T. Orders
Senior Resident Inspector

R. E. Martin, ONRR

280102

IE22
1/1

SPECIAL REPORT

CATAWBA NUCLEAR STATION
DIESEL GENERATOR 1B INVALID FAILURE
DUE TO LOW TURBOCHARGER LUBE OIL PRESSURE TRIP

An invalid failure of Diesel Generator (DG) 1B occurred on August 29, 1992 due to a low turbocharger lube oil pressure trip. This failure occurred during Unit 1's 1EOC6 refueling outage while the unit was in Mode 6. Operations was running the engine for Mechanical Maintenance's break-in runs when the failure occurred. DG 1B was on a monthly test frequency prior to entering the outage. There have been 0 valid failures in the last 20 valid tests and 0 valid failures in the last 100 valid tests on DG 1B. DG 1B remains on a monthly operability test schedule in accordance with Technical Specification 4.8.1.1.2 Table 4.8-1. There is no unavailability time associated with this invalid failure since the Technical Specifications only require one DG during Mode 6. Since DG 1A was operable, DG 1B was not required.

Modification CN-11149 was performed during 1EOC6 outage to replace the non-emergency pneumatic trip instrumentation with electronic trip instrumentation. As part of this modification, the two Calcon turbocharger lube oil pressure sensors were replaced with Rosemount transmitters. These transmitters send signals to the new Rosemount 4001 alarm monitor, which provides a digital display and sends signals to trip the DG and alarm the annunciator panel when programmed setpoints are exceeded. The low turbocharger lube oil pressure trips are part of the Group 2 trip sensors, which means that they are locked out for 60 seconds on an engine start to allow time for engine pressures to build. If the turbocharger lube oil pressure is not greater than 20 psig after this 60 second period, the engine will trip. Also, if pressure drops below 15 psig anytime after this 60 second period, the engine will trip. 20 psig has to be exceeded initially due to the 5 psig deadband programmed on the monitor for these channels.

On August 29, 1992, the DG 1B break-in runs were begun. The 5 minute, 15 minute, and 30 minute runs were completed without any problems. When the 1 hour breakin run was initiated, it was noticed that one of the cylinder petcocks was open, so the engine was immediately shutdown. After this problem was corrected, the engine was restarted (start # 991). After running for 60 seconds, the engine tripped on low turbocharger lube oil pressure. No one was observing the turbocharger lube oil pressure at the time of the trip to determine if the pressure was greater than 20 psig by the end of the Group 2 timeout period. On several of the previous runs, turbocharger lube oil pressure was observed to increase satisfactorily. Personnel from the Instrumentation and Electrical Group and the Component Engineering Group investigated the newly installed alarm monitor and were unable to find any problems. The engine was once again started and no problems were observed. The 1 hour breakin run was completed. The engine was started for the 8 hour breakin run and once more no problems were observed. The remainder of the DG runs were completed, which included numerous starts, and no further problems occurred.

No root cause could be determined for this trip. The two most likely reasons for the trip are: (1) turbocharger lube oil pressure not being high enough prior to the end of the 60 second lockout or (2) the relays for both the low turbocharger lube oil pressure trip and annunciator on the Rosemount alarm monitor not clearing when pressure was increased. As stated earlier, no problems were seen on previous runs or subsequent runs to indicate what might have caused the trip. The low turbocharger lube oil pressure trips are part of the non-emergency shutdown circuitry. On an emergency start signal due to a LOCA or a Blackout, this trip would be bypassed and the engine would continue to run. The Unit 2 DGs will be modified during the 2EOC5 refueling outage to install the new electronic non-emergency trip system.